

Prevention of Heat-Related Illness

Although the elderly are at high risk for heat-related illness, others at high risk include the very young and persons who overexert themselves in hot environments either at work or during recreational activities. However, given sufficient heat exposure, anyone can develop fatal heat stroke.

Infants and very young children are particularly susceptible to heat exhaustion or heat stroke because they may not be able to obtain adequate fluids or avoid hot environments without assistance.

The elderly may also be immobilized because of illness or other injury. In addition, certain drugs taken most often by the elderly increase the risk for heat-related illness. These drugs include antipsychotics, major tranquilizers, antihistamines, over-the-counter sleeping pills, antidepressants and some antiparkinsonian agents.

Also at high risk are unacclimatized adults who work or exercise vigorously outdoors and fail to rest frequently in a cool environment or to drink enough fluids. In addition, excessive alcohol consumption causes dehydration and may dispose people to heat-related illness. Patients who are mentally or chronically ill, those who are acutely ill with febrile illness or diarrhea, and those who are confined to bed or otherwise unable to take care of themselves are more susceptible to heat-related illness. Other risk factors include a prior history of heat stroke, obesity and hyperthyroidism.

There are numerous environmental and personal risk factors involved in heat-related illness. The heat index reflects the joint impact of temperature and humidity on the body. The index is calculated for only a few locations across the state. Specific local factors, both outside of buildings and within, modify the impact for any given person. Cloud cover, shade trees, wind, asphalt and concrete, insulation, air conditioning, ventilation

and use of fans affect the heat stress for an individual. Daytime fluctuation of temperature and the extent of nighttime cooling, modify the heat stress. The duration of exposure, including hours per day and number of successive days of exposure, also modify the stress.

Heat stroke is a life-threatening illness that occurs when the outside temperature adds heat to the body faster than the body can deal with it, so that the internal body temperature rises to the level of high fever. Heat stroke, which may develop within minutes or hours, is an emergency condition and requires immediate treatment to prevent death. Treatment includes rapidly lowering the person's body temperature followed by intensive supportive care.

Signs of Heat Stroke:

- Body temperature 104°F or above
- Headache, dizziness, irritability
- Difficulty breathing
- Hot, red, dry skin
- Rapid, strong pulse initially, then weak and rapid
- Fainting, delirium or seizures may occur

What to do:

- **Seek medical attention at once**, then:
- Keep victim lying down in a cool place.
- Remove victim's clothing and cover with a wet sheet.
- Use air conditioner or fan to cool victim (see paragraphs on fans)
- Give nothing by mouth

Heat exhaustion is milder than heat stroke and typically occurs after several days of high temperatures. Although heat exhaustion is often severe enough to require hospitalization—especially of the elderly—death is uncommon. Treatment includes replacing fluid and electrolyte losses.

Signs of Heat Exhaustion:

- Normal or slightly elevated body temperature

- Pale, clammy skin
- Profuse sweating
- Tiredness and weakness
- Nausea, dizziness, and fainting possible

What to do:

- Lie down in cool area with head and shoulders lowered or legs elevated.
- Loosen clothing.
- Sip salt solution (one teaspoon of salt in 8-ounce glass of water).
- Drink plenty of non-alcoholic liquids.
- Seek medical attention for severe cases.

The most effective ways of avoiding heat-related illness include: reducing physical activity, drinking extra liquids and increasing the amount of time spent in air-conditioned environments. Heat-stressed persons who are unacclimatized often do not drink enough fluids to keep up with fluid losses; such people must make a conscious effort to drink extra fluids. People may also be able to reduce their risk for heat-related illness by scheduling physical activity during the cooler parts of the day, avoiding alcohol consumption, and remaining in air-conditioned environments as much as possible. Being in an air-conditioned environment, even for part of the day, will reduce the risk for heat stroke. The elderly and others at high risk should be encouraged and assisted to take advantage of air-conditioned heat-wave shelters or to seek relief from the heat in air-conditioned public places such as shopping malls.

Taking salt tablets is not recommended and can be harmful to people with such illnesses as high blood pressure and heart conditions.

Fans May Help or Harm:

Fans are less expensive than air conditioners and will increase comfort during hot weather, but when temperatures are very high they are not protective and may add to the body burden of heat. In

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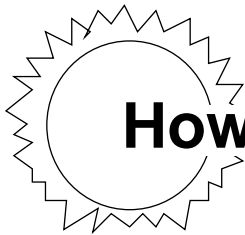
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order for a fan to be effective in cooling the body, the skin surface must be moist. When the skin surface is moist, moving air removes heat from the skin as the moisture evaporates. Unfortunately, when a person begins to develop heat stroke, they stop sweating and evaporative cooling stops. Also, elderly persons may not sweat due to poor heat regulation messages from the heat regulatory center in the brain. To restore the cooling effect of fans after sweating has stopped, it is essential to moisten the skin surface with damp cloths or to dampen the clothing.

Another problem with fans occurs as the air temperature rises to very high temperatures. As the air temperature approaches 100°F, the air flow is increasingly ineffective in cooling the body and at temperatures exceeding 100°F, the fan may be delivering overheated air to the skin at a rate that exceeds the capacity of the body to lose this heat even with sweating. The net effect is then to add heat rather than to cool the body. For this reason, the distribution of fans as part of heat wave relief, is not recommended. The better alternative, by far, when the temperature soars is to use an air conditioner if one is available or to seek shelter in an air-conditioned building.

REFERENCE:

National Center for Environmental Health, Centers for Disease Control and Prevention. Public health network message regarding heat-related illness dated July 12, 1993.



How hot is it? Consider the humidity.



HEAT Index

		Actual Temperature (F°)											
		70°	75°	80°	85°	90°	95°	100°	105°	110°	115°	120°	
Relative Humidity	0%	64°	69°	73°	78°	83°	87°	91°	95°	99°	103°	107°	
	10%	65°	70°	75°	80°	85°	90°	95°	100°	105°	111°	116°	
	20%	66°	72°	77°	82°	87°	93°	99°	105°	112°	120°	130°	
	30%	67°	73°	78°	84°	90°	96°	104°	113°	123°	135°	148°	
	40%	68°	74°	79°	86°	93°	101°	110°	123°	137°	151°		
	50%	69°	75°	81°	88°	96°	107°	120°	135°	150°			
	60%	70°	76°	82°	90°	100°	114°	132°	149°				
	70%	70°	77°	85°	93°	106°	124°	144°					
	80%	71°	78°	86°	97°	113°	136°						
	90%	71°	79°	88°	102°	122°							
	100%	72°	80°	91°	103°								

Apparent Temperature
Combined index of heat and humidity;
or what it "feels like" to the body.

HOW TO USE THIS CHART: Across the top of the chart, locate the actual temperature. Down the left side of the chart, locate the relative humidity. Follow across and down to find the apparent temperature. The heat index (also called the apparent temperature) reflects the combined effect of temperature and humidity on the body. The table shows the apparent temperatures caused by various combinations of air temperature and humidity.

Apparent Temperature	Heat Stress Risk With Physical Activity and/or Prolonged Exposure
90° – 105°	Heat cramps or heat exhaustion possible
105° – 130°	Heat cramps or heat exhaustion likely Heat stroke possible
130° and up	Heat stroke highly likely

This chart is designed to provide general guidelines for assessing the potential severity of heat stress. Individual reactions to heat will vary. Remember that heat illness can occur at lower temperatures than indicated on the chart. In addition, studies indicate that susceptibility to heat disorders tends to increase with age.

Source: National Oceanic and Atmospheric Administration